RESTRICTED CIRCULATION

THIS PAPER IS NOT AN OFFICIAL DOCUMENT; IT IS FOR INFORMATION ONLY AND MUST NOT BE QUOTED IN ANY PRINTED PUBLICATION

AGRICULTURAL MEMORANDUM NO 708

Estimated Actual Soil Moisture Deficits, 1941-70, - NORTHWEST

L P Smith

The analysis of Ag Mem 707 was repeated for stations in the north-west.

P_3 P_4 P_5 P_6 were the potential transpirations for the periods. April-June, April-July, April- August and April to September respectively

and

R_3 R_4 R_5 R_6 the 1941-1970 averages for the equivalent periods.

Multiple regressions:-

	Lower Quartile	Median	Upper Quartile
End of June	0.94*	0.99	0.97
End of July	0.94**	0.99	0.99
End of August	0.90*	0.95	0.93
End of September	-	-	0.93**

* Annual average rainfalls under 1000 mm

** Annual average rainfalls under 1500 mm

For rainfalls above these limits the value was zero (soil at capacity) as it also was for all stations at the end of September at the lower quartile and median limits.

The formulae were as follows:-

	Lower Quartile	Median	Upper Quartile
End of June	$1.5P_3 - 0.014R_3 - 9.65$ (Stations under 1000 mm)	$0.29P_3 - 0.013R_3 + 1.82$	$0.26P_3 - 0.0084R_3 + 2.2$
End of July	$0.49P_4 - 0.01R_4 - 2.1$ (Stations under 1500 mm)	$0.25P_4 - 0.011R_4 + 1.89$	$0.56P_4 - 0.01R_4 - 1.32$
End of August	$0.73P_5 - 0.0083R_5 - 7.84$ (Stations under 1000 mm)	$0.89P_5 - 0.009R_5 - 8.9$	$0.54P_5 - 0.013R_5 - 0.76$
End of September	Zero	Zero	$1.22P_6 - 0.011R_6 - 13.8$

The original data were as follows:-

	JUNE			JULY			AUGUST			SEPT		
NORTHWEST	LQ	M	HQ	LQ	M	HQ	LQ	M	HQ	LQ	M	HQ
Ambleside	0.0	0.0	1.4	0.0	0.0	0.7	0.0	0.0	0.0	0.0	0.0	0.0
Bolton	0.0	0.6	2.4	0.0	0.4	2.0	0.0	0.0	0.1	0.0	0.0	0.0
Morecambe	0.1	1.7	2.9	0.7	1.8	2.8	0.0	0.9	3.0	0.0	0.0	0.9
Blackpool	1.6	2.4	3.1	1.6	2.6	3.6	1.3	2.5	3.4	0.0	0.9	3.5
Newton Rigg	0.5	2.0	2.9	1.4	2.3	3.2	0.0	1.6	2.4	0.0	0.0	0.9
Manchester	1.7	2.2	2.8	1.8	2.4	3.1	0.2	1.5	2.7	0.0	0.0	3.3
Carlisle	0.7	2.1	3.1	1.1	2.2	2.9	0.0	0.5	2.8	0.0	0.0	1.4

Any comments or suggestions on this paper should be referred to the author.

Meteorological Office
Bracknell

February 1975